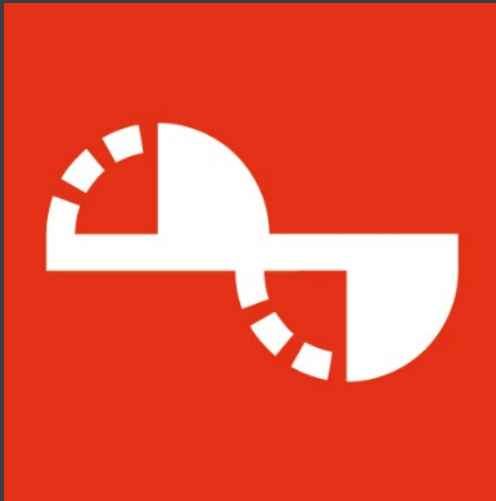




SOLUTIONS FOR BATTERY TESTING, FORMATION AND ASSEMBLING

KEVIN CAMPBELL

ABOUT US

Digatron is an international group of companies with headquarters in Aachen (Germany), with global manufacturing facilities in USA, China, India & Italy.

We are considered as the electronic innovators within the battery industry. Our core purpose has always been energising the battery world with our advanced turn-key power electronic solutions and making the future of tomorrow available today.

For over half a century, we have been developing and producing electronic test and formation systems for all types of batteries, ranging from lithium-ion pouch, cylindrical & prismatic cells for a vast array of applications.





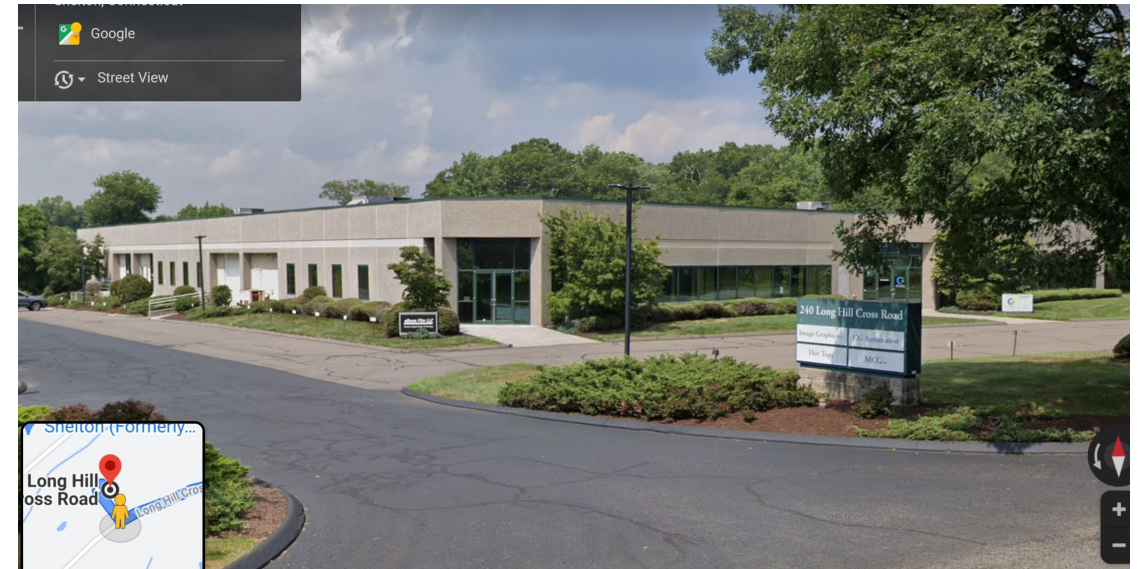
**DIGATRON,
USA HAS
MOVED
TO A NEW
LOCATION!**



DIGATRON
power electronics

NEW ADDRESS

DIGATRON POWER ELECTRONICS
240 LONG HILL CROSS ROAD
SHELTON, CT 06484



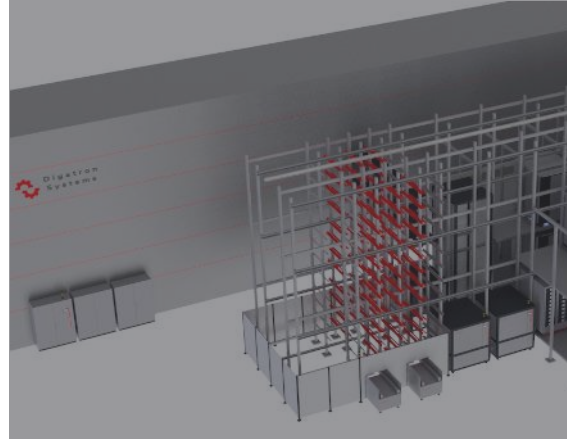
OUR BUSINESS?

TEST AND FORMATION SYSTEMS FOR BATTERIES



LABORATORY

- Cell tester
- Module & SLI tester
- HV pack tester
- Electronic loads



PRODUCTION

- Lithium cell assembly lines
- Lithium formation
- EOL tester
- Lead Formation Rectifier



SUPPORT & SERVICE

- Free hotline
- Training courses
- Repairs
- Spare parts service
- Calibration
- Commissioning
- Upgrade service

OUR CUSTOMERS

- BATTERY MANUFACTURERS
- ENERGY STORAGE TECHNOLOGY
- AUTOMOTIVE EV BATTERY PRODUCERS
- UNIVERSITIES AND LABORATORIES
- R&D SCIENTISTS, ELECTROCHEMISTS



CELL TESTER

DIGATRON MCT SERIES

TECHNICAL DATA



	MCT-HD 2A	MCT-HD 5A	MCT-HD 10A	MCT-ME	MCT-RE
Charge Voltage	-0.2V to 6V	-0.2V to 6V	-0.2V to 6V	0 to 6V	-6V to +6V
Discharge Voltage	6V to 0.5V	6V to 0.5V	6V to 0.7V	0 to 6V	-6V to +6V
Max. output current	2A	5A	10A	50A upto 250A	250A / 300A
# of Current Ranges	4	4	4	No	2
Accuracy, current	0.025 % FS	0.025 % FS	0.05 % FS	< ± 0.1 % fs	< ± 0.05 % fs
Acucracy, voltage	0.025 % FS	0.025 % FS	0.025 % FS	< ± 0.1 % fs	< ± 0.1% fs (<± 0.05 % fs opt.)
regenerative	Yes	Yes	Yes	No	Yes

COMPARISON OF ENERGY CONSUMPTION WITH DIN EN 50342



Non regenerative
bipolar Transistor technology



Bidirectional and regenerative
SiC MOSFET Technology

	Non regenerative bipolar Transistor technology	Bidirectional and regenerative SiC MOSFET Technology
DC Energy, charged	61,8 kWh	61,8 kWh
Dissipated heat energy at charge	34,6 kWh	9,2 kWh
DC Energy, discharged	35,8 kWh	35,8 kWh
Dissipated heat energy at discharge	35,8 kWh	5,3 kWh
AC Energy balance	96,4 kWh	42,2 kWh
Heat balance	70,4 kWh	14,6 kWh
Billing DE	14,46 EUR	6,33 EUR

Energy prices [cent/kWh]				
5	7	10	12	15
USA, CAN	DK, FR, ROK	CN, NL	JP, UK	DE, IT

With regenerative power electronics, not only 56% of electrical energy can be saved. The advantage is even more pronounced in the heat balance. Here, the heat load is only 21 % compared to linear transistor technology.

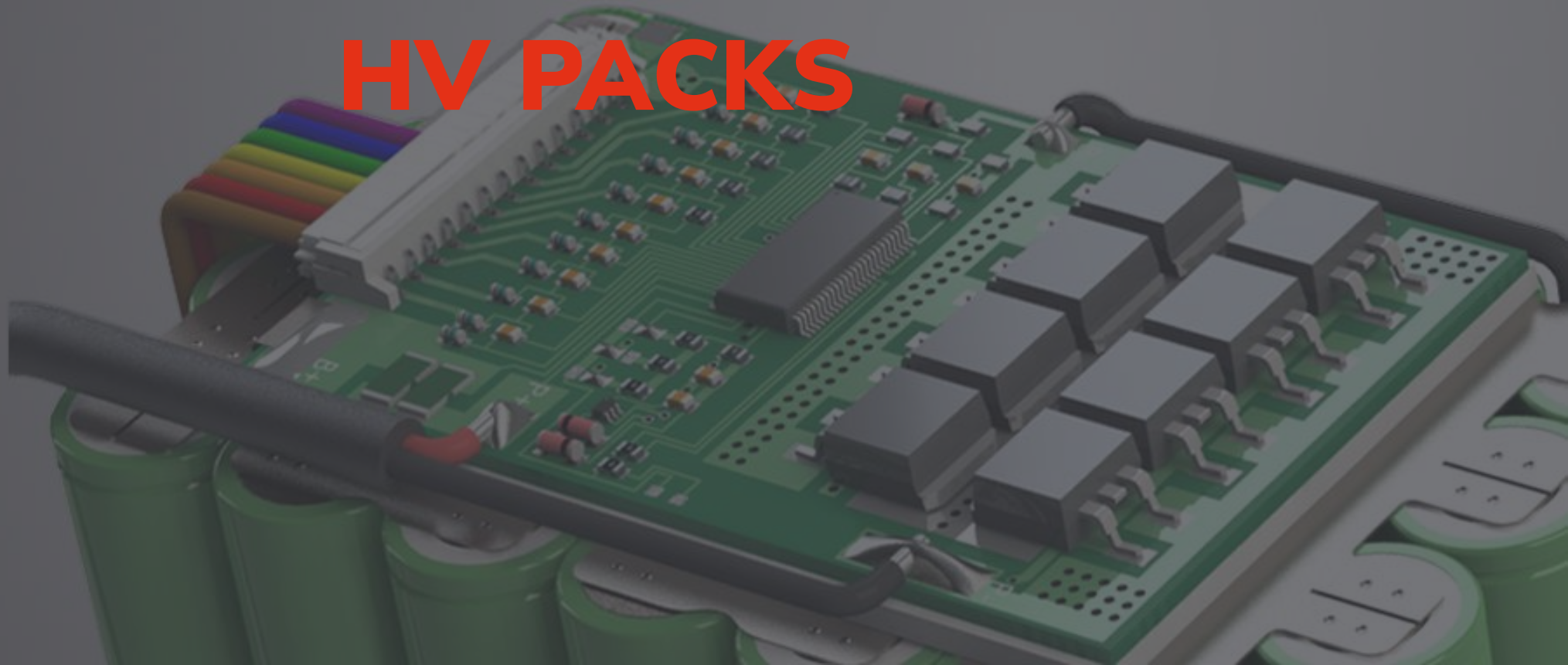
BATTERY MODULES & SLI

BATTERY MODULE TESTER



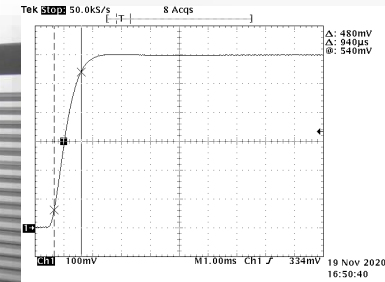
	UBT-HD	UBT-RE	BNT-ME	BNT-IGBT
Voltage range	Charge: -0.1 V up to 18 V Discharge: 0.7 V up to 18V	-20 V up to 20 V	0V to 60V	-150V to +150V
Current range)	10 A	150 A	10A to 250A	500A
Accuracy U_{DC}	$< \pm 0.05 \% fs$	$< \pm 0.05 \% fs$	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$
Accuracy I_{DC}	$< \pm 0.05 \% fs$	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$
Mains feedback	Yes	Yes	No	Yes

HV PACKS



DIGATRON EVT / BE-IGBT

HV TESTER AND
EMULATOR FOR
HIGH-VOLTAGE
BATTERIES

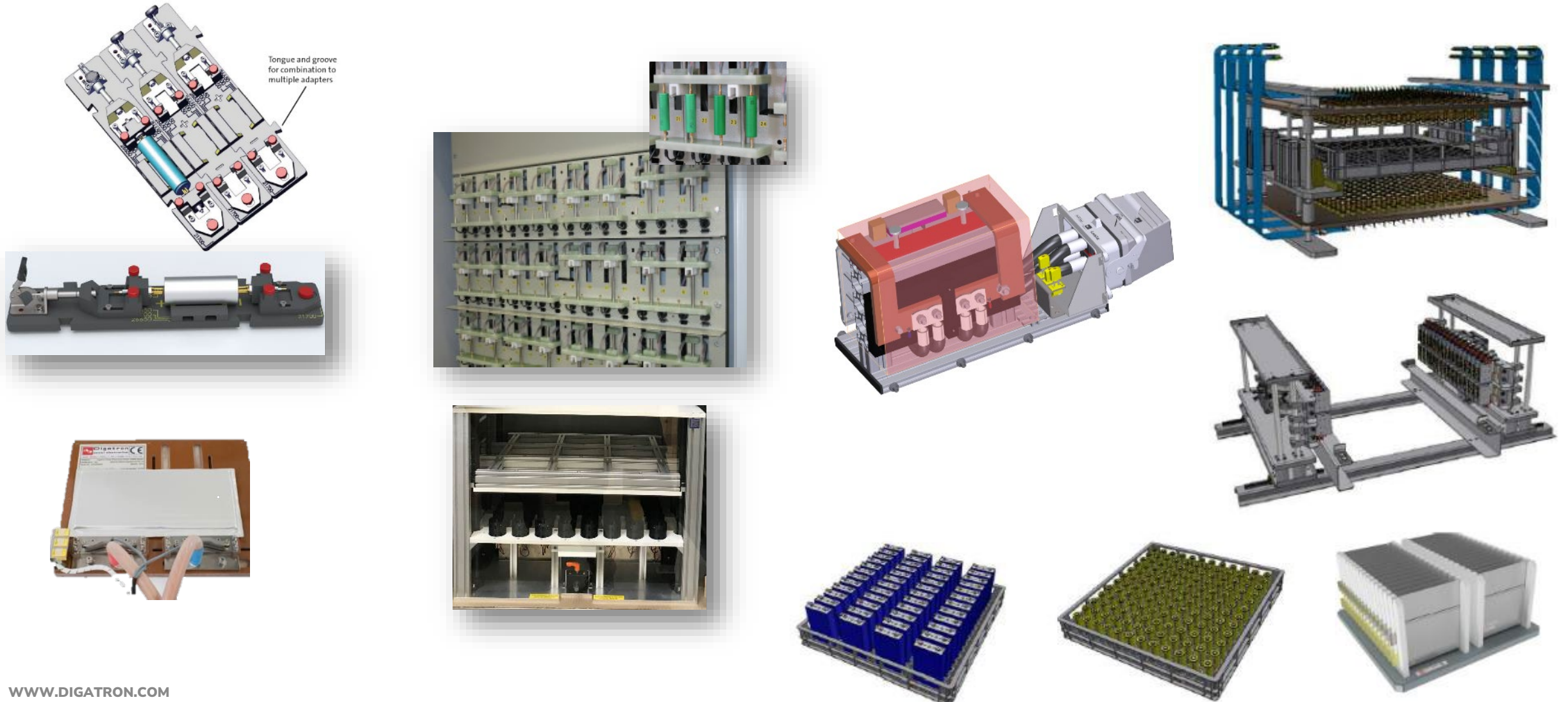


	600 volt	800 volt	1,000 volt
Voltage range	0 V up to 600 V	0 V up to 800 V	50 V up to 1,000 volt
Current per module	300 A / 400 A peak	300 A	200 A
Power per module	80 kW / 135 kW peak	80 kW	80 kW
Accuracy U_{DC}	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$
Accuracy I_{DC}	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$	$< \pm 0.1 \% fs$
Rise time	$\leq 1ms$	$\leq 1ms$	$\leq 1ms$

DIGATRON – BATTERY PACK END-OF-LINE SOLUTION



CELL CONTACTING SOLUTIONS

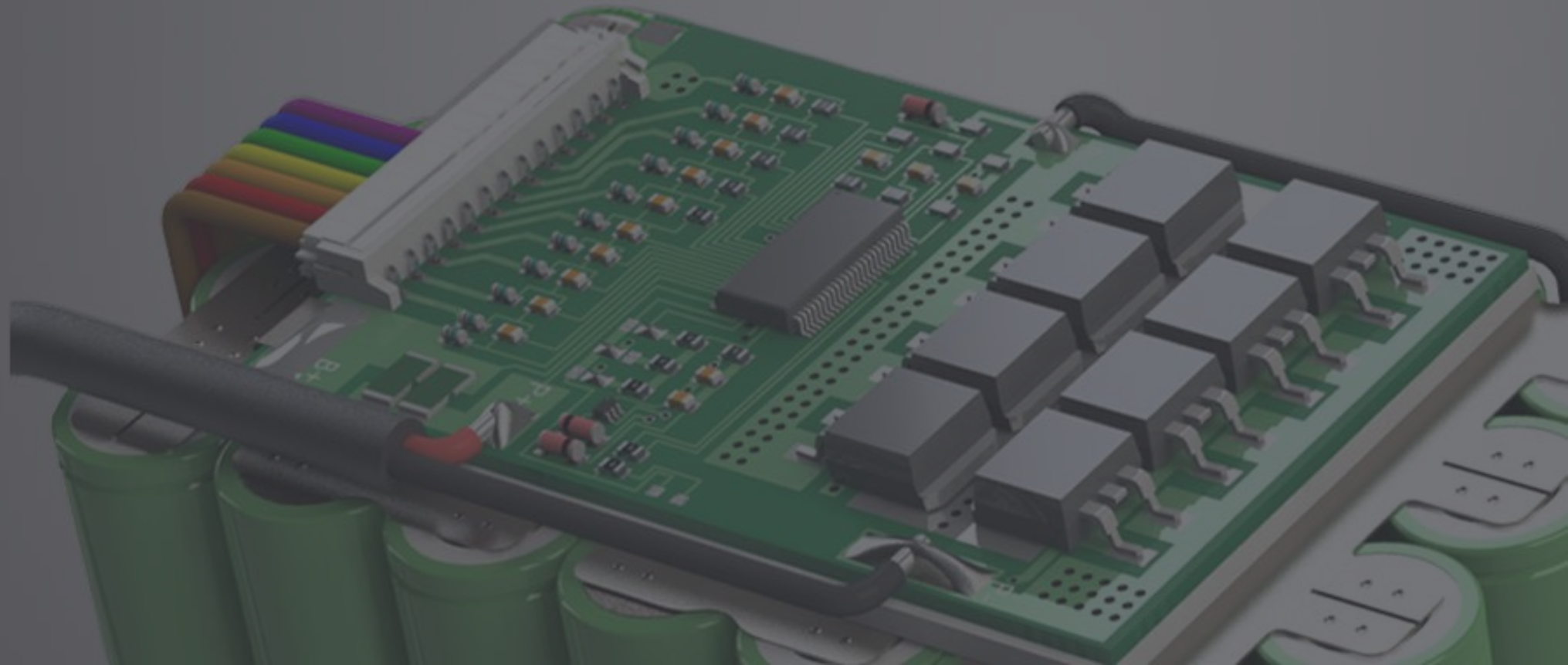


EXAMPLE OF FULL INTEGRATION



DIGATRON GROUP DEVELOPMENTS ITALY

**CELL ASSEMBLY &
FORMATION AGEING & TESTING EQUIPMENT (FA&T)**



Single Station Machines for Pouch Cell Assembly



LABORATORY / SMALL PRODUCTION
Defined product, available with different version level and options

MASS PRODUCTION
Concept products to be customized according to customer process and productivity needs

**SINGLE STATION MACHINES FOR
POUCH CELL PRODUCTION**

**FORMATION AND AGING
AUTOMATED PLANTS**

**ASSEMBLY LINES FOR POUCH
CELL PRODUCTION**

**PRODUCTION LINES FOR
MODULE ASSEMBLY**



CELL ASSEMBLING

**ELECTRODE
CUTTING**

**CELL
STACKING**

**TAB
WELDING**

**POUCH
FORMING**

**POUCH
SEALING**

**CELL
FILLING**



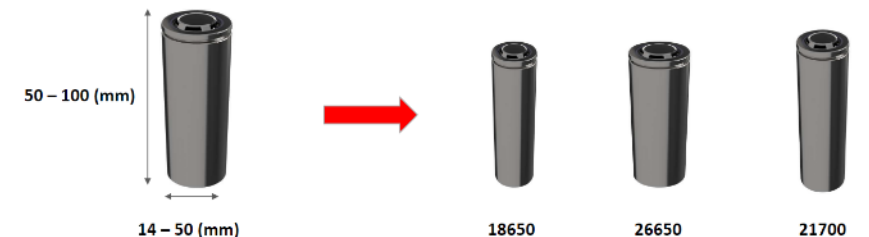
CYLINDRICAL CELL PILOT ASSEMBLY LINE

Digatron Systems' cylindrical cell pilot assembly line includes a complete series of stations for cylindrical cells manufacturing, from electrode cutting and cell winding toward tabs welding, cell filling and sealing.

Several type of cylindrical cell sizes can be manufactured with the same line, by using additional set of tooling.



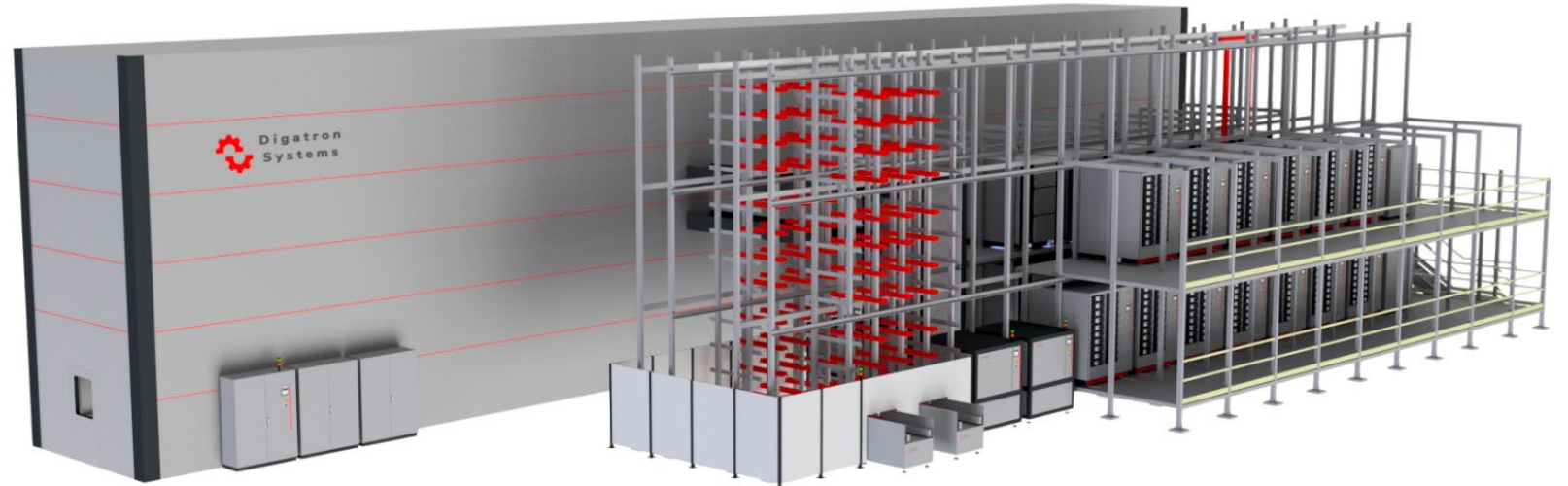
Digatron Systems Confidential Proprietary



PILOT- LABLINE

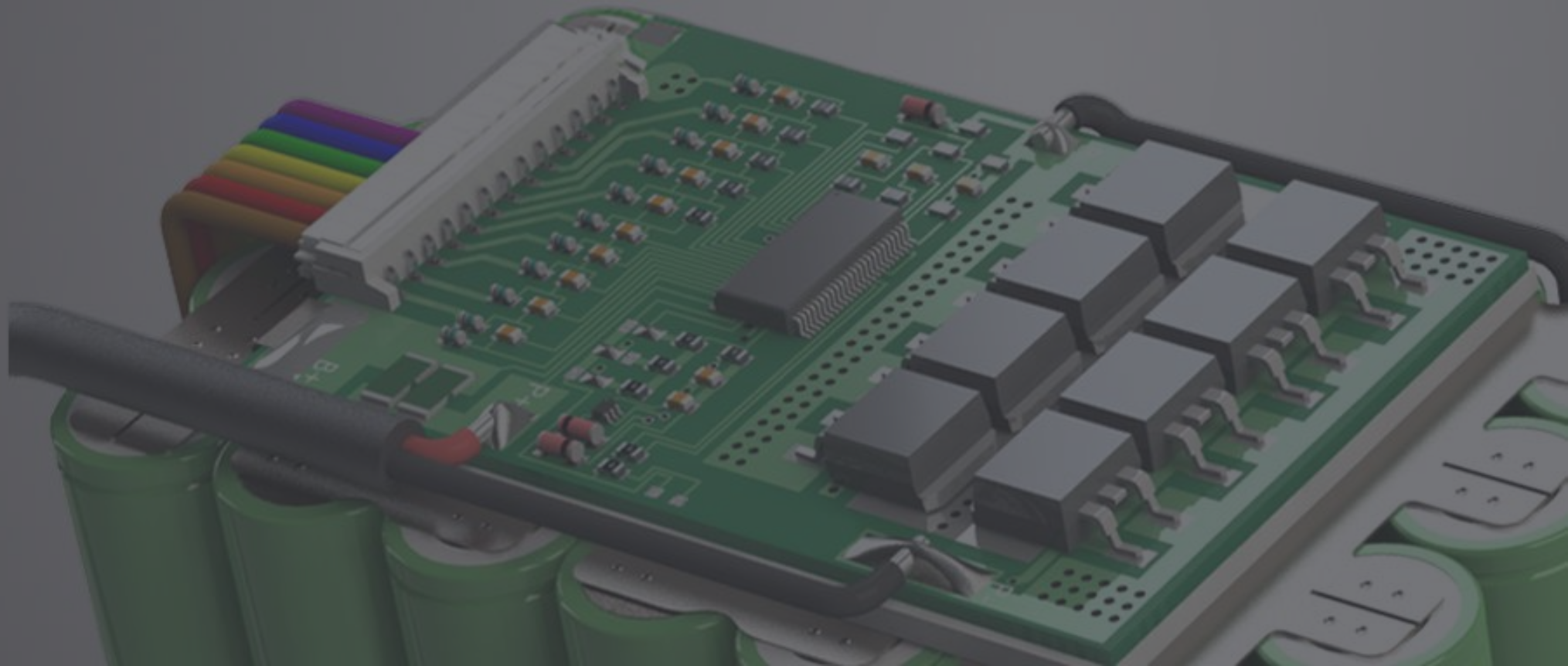


AUTOMATED PLANTS



DIGATRON GROUP DEVELOPMENTS INDIA

ELECTRIC VEHICLE DC FAST CHARGERS, PUNE INDIA



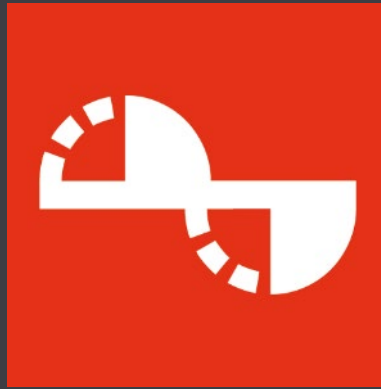


- DC 60kW / 120kW / 240kW
- Available in CCS2 & CHAdeMO
- AC22kW: Type2
- RFID Reader
- Communication module for OCPP connection
- Ethernet or 3G/4G connection
- Slim & compact design
- Reduced Installation cost
- Increased Reliability
- Durable UV resistant exterior
- Low maintenance





**Manufacturing setup for EV
chargers**



THANK YOU!

DO YOU HAVE ANY QUESTIONS?



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